DOCUMENT RESUME

ED 432 969 HE 032 677

AUTHOR	Spanier, Bonnie
TITLE	Biology: Discipline Analysis. Women in the Curriculum Series.
INSTITUTION	Towson Univ., Baltimore, MD. National Center for Curriculum Transformation Resources on Women.
SPONS AGENCY	Ford Foundation, New York, NY.; Fund for the Improvement of Postsecondary Education (ED), Washington, DC.
ISBN	ISBN-1-885303-18-1
PUB DATE	1997-00-00
NOTE	26p.; For related documents in this series, see HE 032 663-689.
AVAILABLE FROM	Towson University, 8000 York Road, Baltimore, MD 21252; Tel: 800-847-9922 (Toll Free); Fax: 410-830-3482; Web site: http://www.towson.edu/ncctrw ($7).
PUB TYPE	Information Analyses (070)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	*Biology; *College Curriculum; College Instruction; Females; Feminism; *Feminist Criticism; Higher Education; Molecular Biology; Science Instruction; Scientific Attitudes; *Scientific Research; *Sex Bias; Sex Differences; Sex Discrimination; *Sex Fairness; Theories
IDENTIFIERS	Gender Issues

ABSTRACT

This essay examines the ways in which biology, as a discipline, has been influenced by feminist scholarship and research into the areas of gender and sexuality, focusing on the validity, limits, and gender bias of scientific objectivity. It explains that gender bias exists not only in who traditionally has been expected to do science (namely white males), but also in what counts as science, noting that "home economics," which started as chemistry and public health, was separated from those sciences and thus devalued primarily because the disciplines had been founded and was practiced by women. The essay goes on to note that feminist critiques document the way that beliefs in "natural" gender differences have permeated even molecular biology, distorting our understanding of how cells and organisms function in health and disease. It examines gender-based naming, which describes certain hormones as "male" and others as "female," and studies that claim that homosexuality is biologically determined from birth. The study concludes that gender bias in biology and other sciences demonstrates that the dominant group's values and interests strongly influence which models are chosen and where research funds go. (Contains 29 references.) (MDM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

HE

ED 432 969

BIOLOGY

Discipline Analysis

Bonnie Spanier
University at Albany, SUNY

WOMEN in the CURRICULUM

HE032677

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

BEST COPY AVAILABLE

Women in the Curriculum

BIOLOGY

Discipline Analysis

Bonnie Spanier

State University of New York
Albany

National Center for
Curriculum Transformation
Resources on Women
1997

National Center for Curriculum Transformation Resources on Women
Institute for Teaching and Research on Women
Towson University
8000 York Road
Baltimore, MD 21252
Phone: (410) 830-3944
Fax: (410) 830-3469
E-mail: ncctrw@towson.edu
http://www.towson.edu/ncctrw

Copyright © 1997
National Center for Curriculum Transformation Resources on Women

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the National Center for Curriculum Transformation Resources on Women.

The National Center for Curriculum Transformation Resources on Women is partially supported by grants from The Ford Foundation and the U.S. Department of Education, Fund for the Improvement of Postsecondary Education, whose support is gratefully acknowledged. The viewpoints expressed herein, however, do not necessarily reflect those of the funding agencies.

Printed on recycled paper by Uptown Press, Baltimore, MD

ISBN 1-885303-18-1

PREFACE

Since the 1970s feminist and multicultural scholarship has been challenging the traditional content, organization, methodologies, and epistemologies of the academic disciplines. By now this scholarship is formidable in both quantity and quality and in its engagement of complex issues. The National Center for Curriculum Transformation Resources on Women is therefore publishing a series of essays that provide brief, succinct overviews of the new scholarship. Outstanding scholars in the disciplines generously agreed to write the essays, which are intended to help faculty who want to revise courses in light of the new information and perspectives. Each essay is accompanied by a bibliography that includes references for further reading, resources for the classroom, and electronic resources.

Elaine Hedges

Series Editor

BIOLOGY

The fundamental issue in current debates in biology is over the validity, limits, and gender bias of scientific objectivity. Work in history, philosophy, critical science studies, and content analysis of biology provides evidence for the influence of gender (ascribed and ideological) in the development of science. Who should and could be a creator of science at a given place and time, what counts as legitimate science, what questions are chosen for appropriate scientific study, how investigations are constructed, and what conclusions are drawn—these are all shown to be affected by cultural beliefs about gender and race. While other fields make truth claims based on "objective" arguments and "universal" standards and values, science traditionally makes a special claim for evaluating the objectivity of truth claims through scientific methods.

When historian of science Margaret Rossiter followed her curiosity about the small number of women listed in the early editions of *American Men of Science* (first published in 1906), she illuminated a rich but frustrating history of women's involvement in the natural sciences in the U.S. since the colonial period. Rich, because she documented a previously invisible or underplayed legacy of extraordinary achievements by women in the sciences; frustrating because those contributions were made by the few extraordinary survivors of daunting forces that obstructed women's participation as equals in scientific communities, whether in government service, industry, or, particularly, academe.[1]

Rossiter's conclusion in 1982 that status in science is related historically to gender presented a profound challenge to assumptions that scientists operate objectively, that scientific information is evaluated solely on its objective merits, and that meritocracy prevails in science because of the very nature of scientific objectivity and its methodology to exclude cultural and personal influences.[2]

Historian Londa Schiebinger's works trace the ways that beliefs about male superiority intertwined in the seventeenth century with the construction of modern science. Evelyn Fox Keller, Ludmilla Jordanova, Elizabeth Potter, and others have argued that the history of Western science reflects a powerful concern to justify and maintain white male superiority simply as part of how things are "naturally." Rational, competent thought is considered male, and emotional, irrational motivation is considered "naturally" female. Whether writing prescriptions for the chaste experimental (male) scientist who cannot and should not depend on female witnesses of scientific experiments (see Potter on Robert Boyle) or the (male) scientist who must strip (female) Nature naked to expose her mysteries (see Keller and Jordanova on Francis Bacon), the founders of modern science created from their culture a gendered association between male/scientist and female/nature-or-object.

Gender bias exists not only in who has been traditionally expected to do science, but in what counts as science as well. In North American science history, for example, "home economics" started as chemistry and public health, but it was separated from those sciences and thus devalued primarily because women founded and practiced it.[3] "Legitimate" science, however, has been distorted by the unrecognized biases that produce science which is considered acceptable but which is in fact marred by inaccuracies, questionable assumptions, and false conclusions.

A powerful bias of our society has been to use the white male as the standard or norm for "humanity." This persists in human anatomy and physiology textbooks used in medical schools, as a recent study documented.[4] The implication is that the female, despite being the majority of most populations, is a deviant version of the norm and is consequently not studied as much.[5]

Nowhere is this more apparent than in the history of neglect and bias in women's particular health needs. While large-scale studies were being done on the effects of aspirin on decreasing the risk of heart disease, all participants were male; yet pronouncements were made assuming that what was good for that select group of males was good for everyone. Heart-healthy cholesterol levels similarly were first set based on studies of males only. Characteristic symptoms of heart disease as well as AIDS were likewise established based on males, resulting in many women dying prematurely. It is only recently, with the combined activism of feminists (including politicians such as Pat Schroeder), physicians, researchers, and other concerned citizens, that the National Institutes of Health, the Centers for Disease Control and Prevention, and other government agencies have turned serious attention to gender as a significant category (more cultural than biological) in our society. This dramatic change mandated that large-scale studies (of drug efficacy, for example) include equal numbers of men and women. In addition, long-overdue large-scale, longitudinal studies of the effects of diet, hormone replacement therapy, and exercise on women's health and longevity are being funded after years of neglect.[6]

While lapses from accuracy and from the rules of scientific methodology and internal correction occur in many areas of science—and good science teaching prepares students for this actuality—it is notable that the most egregious errors have occurred around claims for biological

bases for the differences that mark our status in our societies.[7] Scientific claims abound about the inherent superiority of males and the inherent inferiority of females, or about biological explanations for lower math achievement in women and in non-whites, or about biological differences between heterosexuals and homosexuals. In every case, the scientific basis has proved inaccurate, that is, simply wrong. But it has taken a great deal of close scrutiny to investigate and debunk each of the claims.[8]

How could such errors go undetected among the scientists who review articles, books, and grant proposals? Sociological studies of science document the ways that culturally accepted concepts (such as male-female polarities) and stereotyped gender associations (such as active male-passive female) go largely unquestioned—and, if questioned, remain unchanged—among homogeneous communities of scientists. This holds true not only in animal behavior studies, where with feminist hindsight it might not surprise us that gender beliefs from our culture are superimposed onto social animals,[9] but also in the micro levels of biological study. For example, feminist critiques of cell biology by Emily Martin and Scott Gilbert (The Biology and Gender Study Group) demonstrate that assumptions about the passivity of eggs as compared to the activity of sperm have distorted our understanding of the fertilization process. Anne Fausto-Sterling and others show that gender-biased beliefs cast the development of primary and secondary sexual characteristics in misleading terms of active male development and passive female development, obscuring potentially fruitful areas of research.

Feminist critiques by Evelyn Fox Keller and myself document the way that beliefs in "natural" gender differences have permeated even molecular biology, distorting our understanding of how cells and organisms function in health and in disease. A hierarchical model of the cell, with

the genes (DNA) as the controlling force of life, has predominated in American biology for the past forty years. This view overemphasizes the role of DNA over the other components of the cell (proteins, RNA, small ions, etc.) and distorts the interdependencies among those components. My research demonstrates that this inaccurate paradigm persists despite increasing attention to complexity and interaction at the cellular and molecular levels. The emphasis on genetic explanations of our biology reflects a powerful ideology embedded in our view of genetics; genetics has come to mean, for the most part, what DNA does to control life. As I argue in my book, one consequence of the damage this skewed ideology creates is that students of the molecular biology of cancer are trained to look to genes as causes and solutions, while neglecting the role of the environment in effecting deadly changes in those genes.

Thus we find that gender bias permeates all levels of biology. Describing certain hormones as "male" and others as "female" continues to frame many of the theoretical explanations for male-associated and female-associated behaviors. This dichotomous-gender-biased naming persists despite the long-known facts that these hormones are found in both males and females, that the levels change throughout the life cycle and with circumstances such that a male may have a higher level of "female" hormone than a female, that the hormones are interconverted in both male and female bodies, and that the hormones have dramatic effects (in animals) on anatomy and physiology that have nothing to do with sexual characteristics. Furthermore, claims about universal (human) male behaviors and universal female behaviors are unfounded, except for sperm production, egg production, and gestation and lactation (and, of course, not all male and female humans fit those specifications either).[10]

I highlight gender bias in this essay, but similar, and equally important (and interrelated), investigations illustrate how beliefs about inherent differences in racial/ethnic identity, sexual identity, and even class continue to distort the field of biology.[11] Whether the claims are about inherent propensities for intelligence, criminality, or sexual preference—and whether the claims come from the dominant group or the "minority" group—they have one thing in common: they are logically and scientifically flawed.

Some of the fundamental flaws of studies attempting to demonstrate biological determinism are: comparative categories are arbitrary, overlapping, and more variable within than across categories; study samples are not random or are too small; measurements do not represent the claimed behaviors; alternative explanations are not eliminated; and complex, historically-specific behaviors are reduced to single, universal, measurable qualities. (For example, see Gould; Lewontin *et al.*, Fausto-Sterling's *Myths*, Bleier.)

One gender-biased example is the claim that the corpus callosum (a sheet of nerves linking the right and left halves of the brain) differs in size between men and women. The original 1982 study was inadequate scientifically. That is, the sample size was too small and not randomly selected. Nor did the study take into account factors known to affect the size of the corpus callosum in humans, such as handedness and age. Even the main author admitted to a reporter that the sample size was bothersome, but the results, he said, were too "intriguing" to wait for more reliable data. Nonetheless, this study was published in *Science* magazine, while Ruth Bleier's thorough critique of research on gender differences in the brain was rejected by the same influential journal as being biased against biological determinism. Neuroanatomist Bleier's work included a scientifically controlled, larger study that, along with re-

search by two other groups published in less prestigious and less widely read scientific journals, showed that no significant size difference exists between men and women with regard to the corpus callosum when known factors (age and handedness) are taken into account. Examples such as this one highlight the construction of the field of sex differences research as precisely that: a field of inquiry defined around *differences*, so that studies of no difference or no effect (null findings) are inherently of less interest. Furthermore, by focusing on sex as the major and fixed difference in a population, this research arena generally fails to attend to the great variations in physiology and behavior amongst humans, just as it generally fails to attend to the social consequences of being labeled one sex or another in our society.[12]

What is particularly interesting to me about recent claims of homosexuality being biologically determined from conception (and so genetically inherited) is that the scientists promoting this view are pro-gay rights. Simon LeVay is perhaps the first gay scientist to come out in Science, following a report he published in that magazine, claiming to demonstrate that the brains of homosexual men (and presumably heterosexual women) were different from those of heterosexual men, and that that explained their (homosexual men and heterosexual women) attraction to men. LeVay proposed that a biological difference in the brain creates a particular sexual orientation, such as homosexual or heterosexual.[13] A closer look at the article reveals an inadequate scientific study that, like the study of the corpus callosum, never should have been published, had scientific standards been met. LeVay's study not only has too small a sample size, nonrandom samples, and unjustifiable categorization as heterosexual and homosexual; it ignores contradictory evidence from the previous study on which the research design is based, and it makes questionable leaps from rats to monkeys to humans with regard

to correlations of sexual behavior and brain anatomy. And even if LeVay's research design and data were acceptable, we would still have to question his assertion that the difference in brain anatomy *caused*, rather than *was caused by*, sexual orientation.

The accumulation of evidence from critiques such as those noted above demonstrates that the dominant group's values and interests strongly influence which model is chosen (such as centralized and hierarchical control versus egalitarian and cooperative interactions) and where research funds will go, thereby shaping the content of science.[14] This insight places science alongside other forms of knowledge as a construction of society and culture. Rather than diminishing the significance of "objectivity," this recognition—of the inseparability of science from the society within which it is created—should transform the meaning of objectivity. Many more factors and forms of evidence must be taken into account to create a more accurate, more objective understanding of nature through scientific investigations. Sandra Harding's use of "strong objectivity" embraces this evidence and insists that a less partial understanding of nature cannot emerge without appreciating the particular, historically specific ways that societal values and priorities shape scientific knowledge.[15]

Biologists and other scientists are seeing that the goals of most feminist critiques of biology include creating a less narrow representation of nature and ourselves, a more accurate view of how scientific knowledge is made and codified, a more diversified population of scientists, and a less anti-science, but more informed and involved, citizenry. At the same time, feminist scientists and educators believe that this process will attenuate the use (or misuse) of science as a justifier of unfair inequities of resources and power.

Endnotes

1. Rossiter kept to the definition of science accepted by the dominant establishment, thus excluding important contributions to education and medicine. Based on access to the institutions and communities that supported mainstream science in the U.S., participants were mainly white males, and the female exceptions nearly exclusively white. Kenneth Manning's biography of cell biologist E. E. Just is an important contribution to the history of African Americans in the sciences.

2. Rossiter's groundbreaking and meticulous history of women in mainstream science in the United States supports her contention that status of and within the sciences was related to masculinity; that is, changes that brought about the growth and prominence of science in the U.S. purposely involved relegating women to lower status in or exclusion from science as a profession.

3. See Rossiter, especially Chapter 3, "'Women's Work' in Science," on Ellen Swallow Richards and Alice Hamilton.

4. Kathleen D. Mendelsohn, Linda Z. Nieman, Krista Isaacs, Sophia Lee, Sandra P. Levison, "Sex and Gender Bias in Anatomy and Physical Diagnosis Text Illustrations," *Journal of the American Medical Association* 272 (October 26, 1994): 1267-1270. See also Sue Rosser's *Female-Friendly Science*.

5. Scientists similarly have tended to overvalue the male animal; while the male lion is dubbed King of the Beasts, it is the females who do most of the hunting. The largest bee was first dubbed the "king bee" until it was discovered that "he" was a female. Behavioral studies in mice

were done exclusively on male mice for a long time, since the females' reproduction-related cycles were thought to introduce too many variations. A play on the whiteness of the rats used in psychology experiments adds race to gender as a significant factor in bias in science. See Guthrie's *Even the Rats Are White*.

6. For example, "In Sickness and in Health," Special section, *Women's Review of Books*, Vol XI, Nos. 10-11 (July 1994); Eliot Marshall, "The Politics of Breast Cancer," *Science* 259 (January 29, 1993):616-617; Special section: "Women's Health Research," *Science*, 269 (August 11, 1995): 766-801.

An excellent introductory textbook on women's health concerns that I use in a course on Women, Biology, and Health is *New Dimensions in Women's Health* by Linda Lewis Alexander and Judith H. LaRosa.

The attention to gender as a significant health category might appear to reinforce a belief in inherent biological differences between men as a group and women as a group. But attention to gender differences in health does not allow us immediately to distinguish between biologically based differences between men and women (such as hormonal, which overlap considerably) and differences produced by being treated differently from birth, based on perceived gender. Furthermore, variations within each group are usually much greater than the differences between the two groups.

Studies do show clear effects of poverty on health and longevity, and we know that there are more poor women than men. In addition, socioeconomic class is often not taken into account when comparing groups of different ethnic heritages, so claims of racially-based genetic differences relating to health must be closely scrutinized.

7. Gender, race/ethnicity, and class are three of the most powerful categories that determine, depending on social values and specific contexts, one's place in society and, thus, one's access to resources.

8. See, for example, Fausto-Sterling, Bleier, Gould, Sayers, Tavris, Lewontin *et al.*, and Jacoby and Glauberman for specific critiques of biological differences claims.

9. Darwin's Victorian take on sexual selection continues to influence dominant evolutionary stories about male-female behavior and interaction, cast in stereotypically gendered language. Thus, Bighorn sheep that show little sexual dimorphism in structure or behavior are nonetheless described as if "male" and "female" behaviors were inherently different. Ruth Hubbard, "Have Only Men Evolved?" in Hubbard, *The Politics of Women's Biology*; see also Donna Haraway's provocative critique of primate studies and their legacy, in *Primate Visions*.

10. See Spanier, *Im partial Science*, chapter 5.

11. See both citations of Harding, Longino, Gould, and critiques, such as Jacoby and Glauberman, of Hernstein and Murray's *The Bell Curve*.

12. Ruth Bleier provided that glimpse into the inner workings of peer review and dominant paradigms in science in "A Decade of Feminist Critiques in the Natural Sciences," *Signs* 14 (Autumn 1988): 182-185 [Introduction and dedication by Judith Walzer Leavitt and Linda Gordon, "A Decade of Feminist Critiques in the Natural Sciences: An Address by Ruth Bleier"] I give the details of the story in my article, "Biological Determinism and Homosexuality."

13. In LeVay's paradigm of sexuality, "preference" is inaccurate, since sexual attraction is biologically pro-

grammed, so "sexual orientation" would be the appropriate term. Each term in this discussion is fraught with interpretation and political position: homosexual, heterosexual, bisexual, yet LeVay, like most researchers in that field sticks to a dichotomy. Simon LeVay, "A Difference in Hypothalamic Structure between Heterosexual and Homosexual Men," *Science* 253 (August 30, 1991): 1034-1037.

14. Philosopher of science, Helen Longino's *Science and Social Values* contributes significantly to our understanding of how and where biases become embedded in particular areas of science, such as evolutionary biology and neuroendocrinology.

15. Sandra Harding, *Whose Science? Whose Knowledge? Thinking from Women's Lives* (Ithaca: Cornell U Press, 1991), esp. 149-52, 159, 307.

Bibliography

Alexander, Linda Lewis, and Judith H. LaRosa. *New Dimensions in Women's Health* (Boston: Jones and Bartlett, 1994).

The Biology and Gender Study Group. "The Importance of Feminist Critique for Contemporary Cell Biology" *Hypatia* 3 (1988): 61-76.

Bleier, Ruth. *Science and Gender: A Critique of Biology and Its Theories on Women* (New York: Pergamon, 1984).

Boston Women's Health Book Collective. *The New Our Bodies, Ourselves* (New York: Simon and Schuster, 1992).

Fausto-Sterling, Anne. *Myths of Gender: Biological Theories about Women and Men* (New York: Basic Books, 1985).

Fausto-Sterling, Anne. "Society Writes Biology/Biology Constructs Gender" *Daedalus* (Fall 1987): 61-76.

Gould, Stephen Jay. *The Mismeasure of Man* (New York: Norton, 1981).

Guthrie, Robert V. *Even the Rats Are White: A Historical View of Psychology* (New York: Harper and Row, 1976).

Haraway, Donna. *Primate Visions: Gender, Race, and Nature in the World of Modern Science* (New York: Routledge, 1989).

Harding, Sandra. *Whose Science? Whose Knowledge? Thinking from Women's Lives* (Ithaca: Cornell, 1991).

Harding, Sandra, ed. *The "Racial" Economy of Science: Toward a Democratic Future* (Bloomington: Indiana University Press, 1993).

Hubbard, Ruth. *The Politics of Women's Biology* (New Brunswick: Rutgers University Press, 1990).

Hubbard, Ruth, and Elijah Wald. *Exploding the Gene Myth* (Boston: Beacon Press, 1993).

Jacoby, Russell, and Naomi Glauberman, eds. *The Bell Curve Debate: History, Documents, Opinions* (New York: Times Books, 1995).

Jordanova, L.J. "Natural Facts: A Historical Perspective on Science and Sexuality," in *Nature, Culture, and Gender*, eds. Caril MacCormack and Marilyn Strathern (Cambridge: Cambridge University Press, 1980).

Keller, Evelyn Fox. *Reflections on Gender and Science* (New Haven: Yale, 1985).

Lewontin, Richard C., Steven Rose, and Leon J. Kamin. *Not In Our Genes: Biology, Ideology, and Human Nature* (New York: Pantheon, 1984).

Longino, Helen. *Science and Social Values: Values and Objectivity in Scientific Knowledge* (Princeton: Princeton University Press, 1990).

Manning, Kenneth. *Black Apollo of Science: The Life of Ernest Everett Just* (New York: Oxford University Press, 1983).

Martin, Emily. "The Egg and the Sperm: How Science Has Constructed a Romance Based on Stereotypical Male-Female Roles" *Signs* 16 (Spring 1991): 485-501.

Potter, Elizabeth. "Modeling the Gender Politics in Science" *Hypatia* 3, No.1 (1988): 19-34.

Rosser, Sue. *Female-Friendly Science* (New York: Pergamon, 1990).

Rossiter, Margaret. *Women Scientists in America: Struggles and Strategies to 1940* (Baltimore: Johns Hopkins University Press, 1982).

Sayers, Janet. *Biological Politics: Feminist and Anti-feminist Perspectives* (London and New York: Tavistock, 1982).

Schiebinger, Londa. *The Mind Has No Sex? Women in the Origins of Modern Science* (Cambridge: Harvard University Press, 1989).

Spanier, Bonnie. "Biological Determinism and Homosexuality" *NWSA Journal* 7, No. 1 (Spring 1995): 54-71.

Spanier, Bonnie. *Im/partial Science: Gender Ideology in Molecular Biology* (Bloomington: Indiana University Press, 1995).

Tavris Carol. *The Mismeasure of Woman* (New York: Touchstone, Simon and Schuster, 1993)

Tuana, Nancy, ed. *Feminism and Science* (Bloomington: Indiana University Press, 1989.

About the Author

Bonnie B. Spanier received her doctorate in Microbiology and Molecular Genetics from Harvard University. She taught biology at Wheaton College in Massachusetts, did research on the molecular biology of animal viruses, winning grants from the NIH Young Investigator Research Program and the American Lung Association, and subsequently directed Wheaton's curriculum transformation project to incorporate gender into introductory courses. She is currently Associate Professor in the Women's Studies Department at the University at Albany, State University of New York. Her recent publications include *Im/partial Science: Gender Ideology in Molecular Biology*, Indiana University Press, and "Biological Determination of Homosexuality" in the *National Women's Studies Association Journal*.

Reader Comment

Discipline Analysis Essay: Biology

Thank you for taking a few minutes to provide us with feedback on how you've used this essay. If you have shared it with others, please feel free to copy this form and provide it to them.

Circle the appropriate number:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
• This essay gave an effective summary of issues regarding women in the discipline	1	2	3	4	5
• The information on the discipline was clear	1	2	3	4	5
• Concepts and vocabulary were easy to understand	1	2	3	4	5
• The information in the main body of the essay was useful for course revision	1	2	3	4	5
• The references were very useful	1	2	3	4	5

How did you learn about this essay? Check all that apply.

- ☐ Publication notice
- ☐ Faculty workshop
- ☐ Conference presentation
- ☐ Internet listing
- ☐ Summer institute
- ☐ Other (what?_____)

What use did you make of the essay? Check all that apply.

- ☐ Read it for my own knowledge
- ☐ Used to revise a course
- ☐ Shared with colleagues
- ☐ Assigned as classroom reading

Please tell us something about your institution. Is it a:

- ☐ high school
- ☐ two-year college
- ☐ four-year college
- ☐ research university
- ☐ other (what?_____)

Also tell us something about yourself. Are you: (check all that apply)

- ☐ a faculty member (If so, what is your discipline of training? _____)
- ☐ a student (If so, what is your major? _____)
- ☐ an administrator
- ☐ other (what?_____)

How much formal academic training have you received in this discipline?

- ☐ none
- ☐ one or two courses as an undergraduate
- ☐ undergraduate major
- ☐ some graduate training
- ☐ master's degree training
- ☐ Ph.D. degree training

For additional comments, please write on the back of this card or attach additional pages.

Thanks!

Name:
Address:
City/State/Zip:
Phone:
Email:

TAPE HERE TAPE HERE

Comments: We would welcome additional comments. Please be specific. Write in the space below, or use additional pages if necessary. Thank you!

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 9560 BALTIMORE, MD

POSTAGE WILL BE PAID BY ADDRESSEE

National Center for Curriculum Transformation Resources on Women
Institute for Teaching and Research on Women
Towson University
Towson, MD 21252

Publications of the National Center for Curriculum Transformation Resources on Women

WOMEN IN THE CURRICULUM

The following publications consist of directories, manuals, and essays covering the primary information needed by educators to transform the curriculum to incorporate the scholarship on women. The publications have been designed to be brief, user friendly, and cross referenced to each other. They can be purchased as a set or as individual titles. Tables of contents and sample passages are available on the National Center Web page: http://www.towson.edu/ncctrw/.

➢ ***Directory of Curriculum Transformation Projects and Activities in the U.S.***

The *Directory* provides brief descriptions of 237 curriculum transformation projects or activities from 1973 to the present. It is intended to help educators review the amount and kinds of work that have been occurring in curriculum transformation on women and encourage them to consult project publications (see also *Catalog of Resources*) and to contact project directors for more information about projects of particular interest and relevance to their needs.

386 pages, 8½ x 11 hardcover, $30 individuals, $45 institutions, ISBN 1-885303-07-6

➢ ***Catalog of Curriculum Transformation Resources***

The *Catalog* lists materials developed by curriculum transformation projects and national organizations that are available either free or for sale. These include proposals, reports, bibliographies, workshop descriptions, reading lists, revised syllabi, classroom materials, participant essays, newsletters, and other products of curriculum transformation activities, especially from those projects listed in the *Directory*. These resources provide valuable information, models, and examples for educators leading and participating in curriculum transformation activities.

(Available fall 1997)

➢ ***Introductory Bibliography for Curriculum Transformation***

The *Introductory Bibliography* provides a list of references for beginning curriculum transformation on women, especially for those organizing projects and activities for faculty and teachers. It does not attempt to be comprehensive but rather to simplify the process of selection by offering an "introduction" that will lead you to other sources.

15 pages, 6 x 9 paper, $7, ISBN 1-885303-32-7

➢ ***Getting Started: Planning Curriculum Transformation***

Planning Curriculum Transformation describes the major stages and components of curriculum transformation projects as they have developed since about 1980. Written by Elaine Hedges, whose long experience in women's studies and curriculum transformation projects informs this synthesis, *Getting Started* is designed to help faculty and administrators initiate, plan, and conduct faculty development and curriculum projects whose purpose is to incorporate the content and perspectives of women's studies and race/ethnic studies scholarship into their courses.

124 pages, 6 x 9 hardcover, $20 individuals, $30 institutions, ISBN 1-885303-06-8

➢ ***Internet Resources on Women: Using Electronic Media in Curriculum Transformation***

This manual gives clear, step-by-step instructions on how to use e-mail, find e-mail addresses, and access e-mail discussion lists relevant to curriculum transformation. It explains Telnet, FTP, Gopher, and the World Wide Web, and how to access and use them. It discusses online information about women on e-mail lists and World Wide Web sites. Written by Joan Korenman, who has accumulated much experience through running the Women's Studies e-mail list, this manual is a unique resource for identifying information for curriculum transformation on the Internet. Updates to this manual will be available on the World Wide Web at http://www.umbc.edu/wmst/updates.html .

130 pages, 6 x 9 hardcover, $20 individuals, $30 institutions, ISBN 1-885303-08-4

➢ ***Funding: Obtaining Money for Curriculum Transformation Projects and Activities***

This manual is intended to assist educators who lack experience in applying for grants but are frequently expected to secure their own funding for projects. The manual provides an overview of the process, basic information and models, and advice from others experienced in fund raising.

150 pages,6 x 9 hardcover, $20 individuals, $30 institutions, ISBN 1-885303-05-x

➢ ***Evaluation: Measuring the Success of Curriculum Transformation***

This manual outlines several designs which could be used when assessing the success of a project. *Evaluation: Measuring the Success of Curriculum Transformation* is written by Beth Vanfossen, whose background in the teaching of research methods as well as practical experience in conducting evaluation research informs the manual's advice. Evaluation is an increasingly important component of curriculum transformation work on which project directors and others often need assistance.

(Available fall 1997)

➢ ***Discipline Analysis Essays***

Under the general editorship of Elaine Hedges, the National Center has requested scholars in selected academic disciplines to write brief essays summarizing the impact of the new scholarship on women on their discipline. These essays identify and explain the issues to be confronted as faculty in these disciplines revise their courses to include the information and perspectives provided by this scholarship. The series is under continuous development, and titles will be added as they become available. See order form for essays currently available.

27 - 60 pages, 6 x 9 paper, $7 each

➢ ***CUNY Panels: Rethinking the Disciplines***

Panels of scholars in seven disciplines address questions about the impact on their disciplines of recent scholarship on gender, race, ethnicity, and class. The panels were developed under the leadership of Dorothy O. Helly as part of the Seminar on Scholarship and the Curriculum: The Study of Gender, Race, Ethnicity, and Class within The CUNY Academy for the Humanities and Sciences. For this seminar CUNY received the "Progress in Equity" award for 1997 from the American Association of University Women (AAUW).

56 - 85 pages, 6 x 9 paper, $10 each

ORDER FORM 1-800-847-9922, 8:30-4:00 EST, M-F or Fax: 1-410-830-3482

National Center for Curriculum Tranformation Resources on Women
Towson University, Baltimore, MD 21252

SHIP TO:

Name _____

Institution _____

Address _____ (*no P.O. Boxes*)

City _____ State _____ Zip _____

Phone _____ Fax _____ E-mail _____

All orders must be prepaid **by charging the total to a credit card by phone, fax, or mail or by enclosing a check for the total amount with the order form. No purchase orders.**

☐ Check enclosed ☐ Visa ☐ Mastercard ☐ Discover

Account # _____ Exp. Date ____/____

Signature _____

Printed Name _____

CUT HERE

WOMEN IN THE CURRICULUM

Title	Quantity	Total Cost
Complete SET of all titles listed below at 10% discount $251 set (individuals); $292 set (institutions) + $20 shipping		$
• **Directory of Projects & Activities,** Hardcover: $30 (individual); $45 (institutions)		$
• **Introductory Bibliography,** Paper: $7		$
• **Getting Started,** Hardcover: $20 (individual); $30 (institutions)		$
• **Internet Resources on Women,** Hardcover: $20 (individual); $30 (institutions)		$
• **Funding for Projects & Activities,** Hardcover: $20 (individual); $30 (institutions)		$
• **Discipline Analysis Essays,** Paper: $7 each		$

___ Anthropology ___ Education ___ Philosophy
___ Art ___ European History ___ Political Science
___ Biology ___ Geography ___ Psychology
___ British Literature ___ Health ___ Sociology
___ Composition ___ Music ___ U.S. History
___ Economics

• **CUNY Panels: Rethinking the Disciplines,** Paper: $10 each		$

___ Anthropology ___ History ___ Sociology
___ Biology ___ Literature
___ Education ___ Psychology

Subtotal	$
Sales Tax (MD residents add 5%)	$
Shipping/Handling (UPS, $4 first book, $1 ea. addl.)	$
TOTAL	$

Make checks payable to: **TU UNIVERSITY STORE**
Mail order to: **University Store, University Union Bldg,**
Towson University, 8000 York Rd., Baltimore, MD 21252
Phone orders: **1-800-847-9922**

Printed in USA 1997

Essays in this *Discipline Analysis* series, edited by Elaine Hedges, summarize the impact on specific disciplines of the new scholarship on women. Written by scholars in the disciplines, these essays identify and explain the issues to be confronted by faculty in individual disciplines as they revise their courses to include women. Each essay provides a valuable bibliography, frequently with a separate listing for internet resources.

Publications available in WOMEN in the CURRICULUM series

- Directory of Curriculum Transformation Projects and Activities in the U.S.
- Catalog of Curriculum Transformation Resources
- Introductory Bibliography: Basic References for Curriculum Transformation
- Getting Started: Planning Curriculum Transformation Work
- Internet Resources on Women: Using Electronic Media in Curriculum Transformation
- Funding: Obtaining Money for Curriculum Transformation Projects and Activities
- Evaluation: Measuring the Success of Curriculum Transformation
- Essays on Selected Topics and Issues
- Discipline Analysis Essays:
  - Anthropology
  - Art
  - Biology
  - British Literature
  - Composition
  - Economics
  - Education
  - European History
  - Geography
  - Health
  - Music
  - Philosophy
  - Political Science
  - Psychology
  - Sociology
  - U.S. History
- CUNY Panels:
  Rethinking the Disciplines
  - Anthropology
  - Biology
  - Education
  - History
  - Literature
  - Psychology
  - Sociology

National Center for Curriculum Transformation Resources on Women

Institute for Teaching and
Research on Women
Towson University

ISBN 1-885303-18-1

BEST COPY AVAILABLE